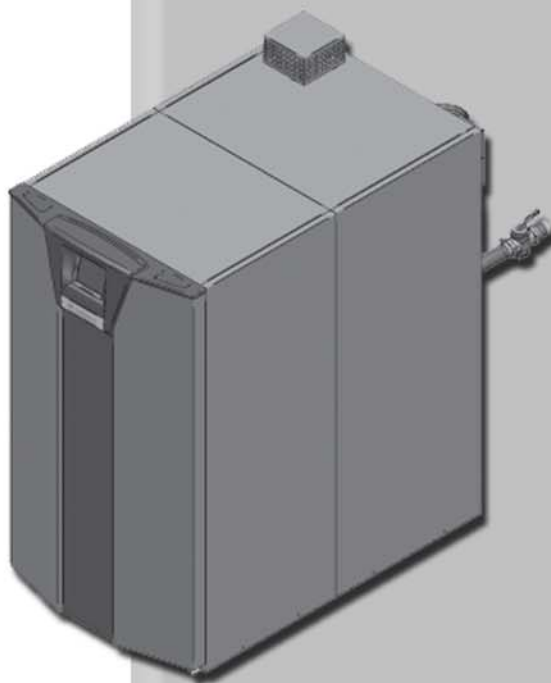




CONDENSING BOILER

## User's Information Manual

### Models: 1.0 - 1.3 - 1.5



**Lochinvar®**  
High Efficiency Water Heaters, Boilers and Pool Heaters

**WARNING:** If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

-- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

-- **WHAT TO DO IF YOU SMELL GAS**

- Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a near by phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

**Save this manual for future reference.**

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## Hazard definitions

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels or to important information concerning the life of the product.

### **DANGER**

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

### **WARNING**

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

### **CAUTION**

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### **CAUTION**

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

### **NOTICE**

NOTICE indicates special instructions on installation, operation, or maintenance that are important but not related to personal injury or property damage.

## Please read before proceeding

### NOTICE

The SYNC Installation and Operation Manual along with the SYNC Service Manual are for use only by a qualified heating installer/service technician. Refer only to this User's Information Manual for your reference. Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury (exposure to hazardous materials) or loss of life. Installation and service must be performed by a qualified installer, service agency or the gas supplier (who must read and follow the supplied instruction before installing, servicing, or removing this boiler. This boiler contains materials that have been identified as carcinogenic, or possibly carcinogenic, to humans).

### NOTICE

When calling or writing about the boiler – Please have the boiler model and serial number from the boiler rating plate.

Consider piping and installation when determining boiler location.

Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Factory warranty (shipped with unit) does not apply to units improperly installed or improperly operated.

### ⚠ WARNING

Failure to adhere to the guidelines on this page can result in severe personal injury, death, or substantial property damage.

### ⚠ WARNING

DO NOT install units in rooms or environments that contain corrosive contaminants (see Table 1A on page 4). Failure to comply could result in severe personal injury, death, or substantial property damage.

## Boiler service and maintenance –

- To avoid electric shock, disconnect electrical supply before performing maintenance.
- To avoid severe burns, allow boiler to cool before performing maintenance.

## Boiler operation –

- Do not block flow of combustion or ventilation air to the boiler. This boiler is equipped with a control which will automatically shut down the boiler should air or vent be blocked. If vent or air blockage is easily accessible and removable, remove it. The boiler should attempt to restart. If blockage is not obvious or cannot be removed, have the boiler and system checked by a qualified service technician.
- Should overheating occur or gas supply fail to shut off, do not turn off or disconnect electrical supply to the circulator. Instead, shut off the gas supply at a location external to the appliance.
- Do not use this boiler if any part has been under water. The possible damage to a flooded appliance can be extensive and present numerous safety hazards. Any appliance that has been under water must be replaced.

## Boiler water –

- Thoroughly flush the system (without boiler connected) to remove sediment. The high-efficiency heat exchanger can be damaged by build-up or corrosion due to sediment.
- Do not use petroleum-based cleaning or sealing compounds in the boiler system. Gaskets and seals in the system may be damaged. This can result in substantial property damage.
- Do not use “homemade cures” or “boiler patent medicines”. Serious damage to the boiler, personnel, and/or property may result.
- Continual fresh make-up water will reduce boiler life. Mineral buildup in the heat exchanger reduces heat transfer, overheats the stainless steel heat exchanger, and causes failure. Addition of oxygen carried in by makeup water can cause internal corrosion. Leaks in boiler or piping must be repaired at once to prevent makeup water.

## Freeze protection fluids –

- NEVER use automotive antifreeze. Use only inhibited propylene glycol solutions, which are specifically formulated for hydronic systems. Ethylene glycol is toxic and can attack gaskets and seals used in hydronic systems.

# 1 Prevent combustion air contamination

## ⚠ WARNING

If the boiler combustion air inlet is located in any area likely to cause contamination, or if products which would contaminate the air cannot be removed, you must have the combustion air and vent re-piped and terminated to another location. Contaminated combustion air will damage the boiler, resulting in possible severe personal injury, death, or substantial property damage.

## ⚠ WARNING

If the boiler combustion air inlet is located in a laundry room or pool facility, for example, these areas will always contain hazardous contaminants.

Pool and laundry products and common household and hobby products often contain fluorine or chlorine compounds. When these chemicals pass through the boiler, they can form strong acids. The acid can eat through the boiler wall, causing serious damage and presenting a possible threat of flue gas spillage or boiler water leakage into the building.

Please read the information listed in Table 1A. If contaminating chemicals will be present near the location of the boiler combustion air inlet, have your installer pipe the boiler combustion air and vent to another location, per the SYNC Installation and Operation Manual.

## ⚠ WARNING

To prevent the potential of severe personal injury or death, check for areas and products listed in Table 1A before installing the boiler or air inlet piping.

If contaminants are found, you MUST:

- Remove products permanently.
- OR—
- Relocate air inlet and vent terminations to other areas.

**Table 1A Corrosive Contaminants and Sources**

Products to avoid:
Spray cans containing chloro/fluorocarbons
Permanent wave solutions
Chlorinated waxes/cleaners
Chlorine-based swimming pool chemicals
Calcium chloride used for thawing
Sodium chloride used for water softening
Refrigerant leaks
Paint or varnish removers
Hydrochloric acid/muriatic acid
Cements and glues
Antistatic fabric softeners used in clothes dryers
Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms
Adhesives used to fasten building products and other similar products
Areas likely to have contaminants
Dry cleaning/laundry areas and establishments
Swimming pools
Metal fabrication plants
Beauty shops
Refrigeration repair shops
Photo processing plants
Auto body shops
Plastic manufacturing plants
Furniture refinishing areas and establishments
New building construction
Remodeling areas
Garages with workshops

## 2 Maintenance schedule

Service technician (see the SYNC Service Manual)		Owner maintenance (see pages 6 - 8 for detailed instructions)		
ANNUAL START-UP	<b>General:</b> <ul style="list-style-type: none"><li>• Address reported problems, if any</li><li>• Inspect interior; clean and vacuum if necessary;</li><li>• Clean condensate trap and fill with fresh water</li><li>• Check for leaks (water, gas, flue, condensate)</li><li>• Verify flue and air lines in good condition and sealed tight</li><li>• Check system water pressure/system piping/expansion tank</li><li>• Check control settings</li><li>• Check ignition and flame sense electrodes (sand off any deposits; clean and reposition)</li><li>• Check wiring and connections</li><li>• Perform start-up checkout and performance verification per Section 9.</li><li>• Flame inspection (stable, uniform)</li><li>• Flame signal (at least 10 microamps at high fire)</li><li>• Clean the heat exchanger if flue temperature is more than 54°F (30°C) above return water temperature.</li><li>• Test low water flow conditions.</li></ul> <b>If combustion or performance indicate need:</b> <ul style="list-style-type: none"><li>• Clean heat exchanger</li><li>• Remove and clean burner using compressed air only</li><li>• Clean the blower wheel</li></ul>			
		<b>Daily</b>	<ul style="list-style-type: none"><li>• Check boiler area</li><li>• Check pressure/temperature gauge</li></ul>	
		<b>Monthly</b>	<ul style="list-style-type: none"><li>• Check vent piping</li><li>• Check air piping</li><li>• Check air and vent termination screens</li><li>• Check relief valve</li><li>• Check condensate drain system</li><li>• Check air vents</li></ul>	
		<b>Every 6 months</b>	<ul style="list-style-type: none"><li>• Test low water cutoff</li><li>• Reset button (LWCO)</li><li>• Check boiler piping (gas and water) for leaks</li><li>• Operate relief valve</li></ul>	
		<b>End of season months</b>	<ul style="list-style-type: none"><li>• Shut boiler down (unless boiler used for domestic hot water)</li></ul>	

### **WARNING**

Follow the maintenance procedures given throughout this manual. Failure to perform the service and maintenance or follow the directions in this manual could result in damage to the boiler or system, resulting in severe personal injury, death, or substantial property damage.

## 2 Maintenance schedule

### Maintenance procedures

#### Boiler must be serviced and maintained

##### **⚠ WARNING**

The boiler must be inspected and started annually at the beginning of the heating season by a qualified service technician. In addition, the maintenance and care of the boiler designated on page 5 of this manual and explained on pages 6 through 8 must be performed to assure maximum boiler efficiency and reliability. Failure to service and maintain the boiler and system could result in equipment failure, causing possible severe personal injury, death, or substantial property damage.

##### **NOTICE**

The following information provides detailed instructions for completing the maintenance items listed in the maintenance schedule on page 5. In addition to this maintenance, the boiler must be serviced and started up at the beginning of each heating season by a qualified service technician.

#### Check boiler area

##### **⚠ WARNING**

To prevent potential of severe personal injury, death, or substantial property damage, eliminate all materials discussed below from the boiler vicinity and the vicinity of the boiler combustion air inlet. If contaminants are found:

Remove products immediately from the area. If they have been there for an extended period, call a qualified service technician to inspect the boiler for possible damage from acid corrosion.

If products cannot be removed, immediately call a qualified service technician to re-pipe vent and air piping and locate vent termination/air intake away from contaminated areas.

1. Combustible/flammable materials -- Do not store combustible materials, gasoline or any other flammable vapors or liquids near the boiler. Remove immediately if found.
2. Air contaminants -- Products containing chlorine or fluorine, if allowed to contaminate the boiler intake air, will cause acidic condensate in the boiler. This will cause significant damage to the boiler if allowed to continue.

Read the list of potential materials listed in Table 1A on page 4 of this manual. If any of these products are in the room from which the boiler takes its combustion air, they must be removed immediately or the boiler combustion air (and vent termination) must be relocated to another area.

#### Check pressure/temperature gauge

1. Make sure the pressure reading on the boiler pressure/temperature gauge does not exceed 24 psi (165.5 kPa). Higher pressure may indicate a problem with the expansion tank.
2. Contact a qualified service technician if problem persists.

#### Check vent piping

1. Visually inspect the flue gas vent piping for any signs of blockage, leakage, or deterioration of the piping. Notify your qualified service technician at once if you find any problems.

##### **⚠ WARNING**

Failure to inspect the vent system as noted above and have it repaired by a qualified service technician can result in vent system failure, causing severe personal injury or death.

#### Check air piping

1. Visually inspect the air inlet elbow to be sure it is unobstructed. Inspect the entire length of air piping to ensure piping is intact and all joints are properly sealed.
2. Call your qualified service technician if you notice any problems.

#### Check relief valve

1. Inspect the boiler relief valve and the relief valve discharge pipe for signs of weeping or leakage.
2. If the relief valve often weeps, the expansion tank may not be working properly. Immediately contact your qualified service technician to inspect the boiler and system.

#### Check condensate drain system

1. Inspect the condensate drain line, condensate PVC fittings and condensate trap.

##### **Fill condensate trap with water**

1. Remove the PVC cap retaining screw from the PVC cap (FIG. 2-1).
2. Remove the 2" PVC cap with the switch located at the top of the trap (FIG. 2-1).

## 2 Maintenance schedule *(continued)*

3. Fill with fresh water until the water begins to pour out of the drain.
4. Replace the cap. Press the cap onto the trap until the cap makes contact with the drain.
5. Replace the retaining screw.

### **⚠ WARNING**

The condensate trap (FIG. 2-1) must be filled with water during all times of boiler operation to avoid flue gas emission from the condensate drain line. Failure to fill the trap could result in severe personal injury or death.

### **NOTICE**

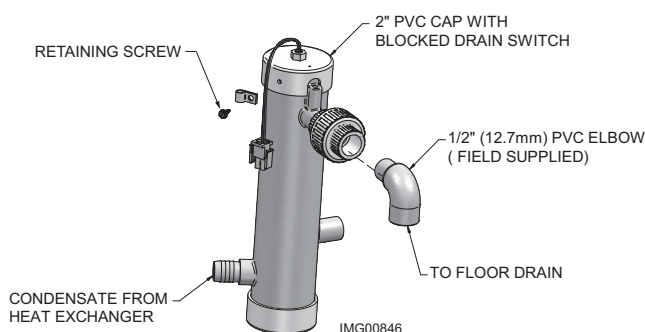
Use materials approved by the authority having jurisdiction. In the absence of other authority, PVC and CPVC pipe must comply with ASTM D1785 or D2845. Cement and primer must comply with ASME D2564 or F493. For Canada use CSA or ULC certified PVC or CPVC pipe, fittings, and cement.

### **NOTICE**

To allow for proper drainage on large horizontal runs, a second line vent may be required and tubing size may need to increase to 1 inch.

The condensate line must remain unobstructed, allowing free flow of condensate. If condensate is allowed to freeze in the line or if the line is obstructed in any other manner, condensate can exit from the boiler tee, resulting in potential water damage to property. Call your qualified service technician to inspect the boiler and system.

**Figure 2-1 Condensate Trap**



### Condensate disposal

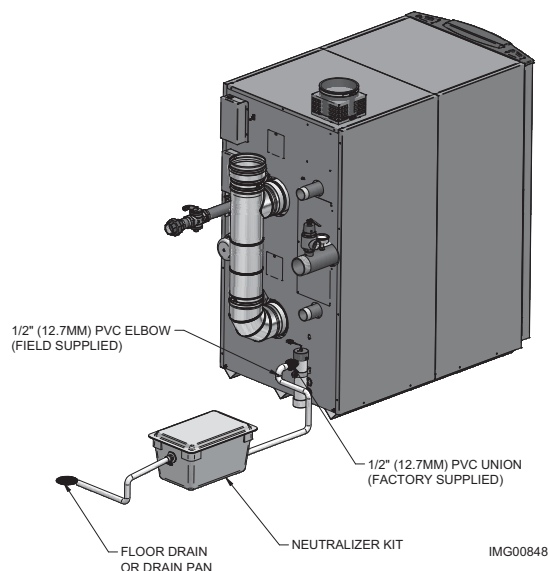
1. This boiler is a high efficiency appliance that produces condensate.
2. The rear of the boiler has a 1/2 inch (12.7 mm) PVC union for connection of a 1/2 inch (12.7 mm) PVC pipe (FIG. 2-2).
3. Slope condensate tubing down and away from the boiler into a drain or condensate neutralizing filter. Condensate from the SYNC will be slightly acidic (typically with a pH from 3 to 5). Install a neutralizing filter if required by local codes.

A Neutralizer Kit (FIG. 2-2) is available from the factory (KIT3046).

4. Install the 1/2 inch (12.7 mm) PVC elbow (field provided) as shown in FIG. 2-2.
5. Do not expose condensate line to freezing temperatures.

6. A condensate removal pump is required if the boiler is below the drain. When installing a condensate pump, select one approved for use with condensing boilers and furnaces. The pump should have an overflow switch to prevent property damage from condensate spillage. Call your qualified service technician to inspect the boiler and system.

**Figure 2-2 Condensate Disposal**

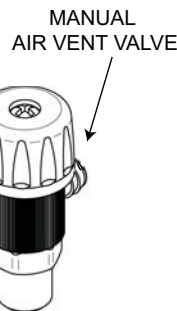


## 2 Maintenance schedule

### Check air vents

1. Reference FIG. 2-3 below.
2. Visually inspect the vent to make sure that no leaks are present.
3. If there is leaking, tighten the pin valve.
4. If the leaking continues, replace the air vent.

**Figure 2-3 Air Vent**



### Test low water cutoff (if installed)

1. If the system is equipped with a low water cutoff, test the low water cutoff periodically during the heating season, following the low water cutoff manufacturer's instructions.

### Reset button (low water cutoff)

1. Testing the low water cutoff shuts the unit off. Press the RESET button on the low water cutoff to turn the unit back on.

### Check boiler piping (gas and water)

1. Remove the boiler front access door and perform a gas leak inspection per steps 1 through 7 of the Operating Instructions on page 9. If gas odor or leak is detected, immediately shut down the boiler following the procedure on page 9. Call a qualified service technician.
2. Visually inspect for leaks around water piping. Also inspect the circulators, relief valve, and fittings. Immediately call a qualified service technician to repair any leaks.

#### **WARNING**

Have leaks fixed at once by a qualified service technician. Failure to comply could result in severe personal injury, death, or substantial property damage.

3. Replace the front access door.

### Operate relief valve

1. Before proceeding, verify that the relief valve outlet has been piped to a safe place of discharge, avoiding any possibility of scalding from hot water.

#### **WARNING**

To avoid water damage or scalding due to valve operation, a metal discharge line must be connected to the relief valve outlet and run to a safe place of disposal. This discharge line must be installed by a qualified heating installer or service technician in accordance with the instructions in the SYNC Installation and Operation Manual. The discharge line must be terminated so as to eliminate possibility of severe burns or property damage should the valve discharge.

2. Read the boiler pressure/temperature gauge to make sure the system is pressurized. Lift the relief valve top lever slightly, allowing water to relieve through the valve and discharge piping.
3. If water flows freely, release the lever and allow the valve to seat. Watch the end of the relief valve discharge pipe to ensure that the valve does not weep after the line has had time to drain. If the valve weeps, lift the seat again to attempt to clean the valve seat. If the valve continues to weep afterwards, contact your qualified service technician to inspect the valve and system.
4. If water does not flow from the valve when you lift the lever completely, the valve or discharge line may be blocked. Immediately shut down the boiler, following the operating instructions on page 9 of this manual. Call your qualified service technician to inspect the boiler and system.

### Shut boiler down (unless boiler is used for Domestic Water)

1. Follow "To Turn Off Gas to Appliance" on page 9 of this manual.
2. Do not drain the system unless exposure to freezing temperatures will occur.
3. Do not drain the system if it is filled with an antifreeze solution.
4. DO NOT shut down boilers used for domestic water heating, they must operate year-round.

### 3 Operating instructions

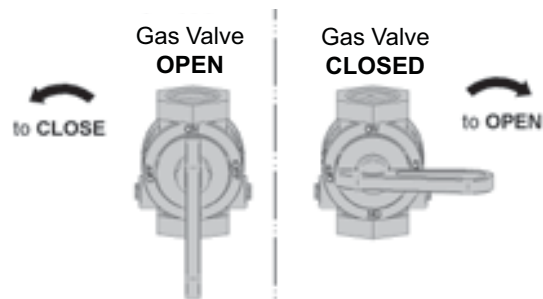
#### FOR YOUR SAFETY READ BEFORE OPERATING

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
  - B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- WHAT TO DO IF YOU SMELL GAS**
- Do not try to light any appliance.
  - Do not touch any electric switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to turn the gas control knob. Never use tools. If the handle will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
  - D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

#### OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Remove front door.
6. Turn gas shutoff valves counterclockwise to "OFF". Handle will be perpendicular to pipe. Do not force.
7. Wait five (5) minutes to clear out any gas. If you then smell gas, **STOP!** Follow "B" in the safety information above this label. If you don't smell gas, go to next step.
8. Turn gas shutoff valve clockwise to "ON". Handle will be parallel to pipe.
9. Install top cover.
10. Turn on all electric power to appliance.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.



#### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove front door.
4. Turn gas shut off valves counterclockwise to "OFF". Handle will be perpendicular to pipe. Do not force.
5. Install front door.

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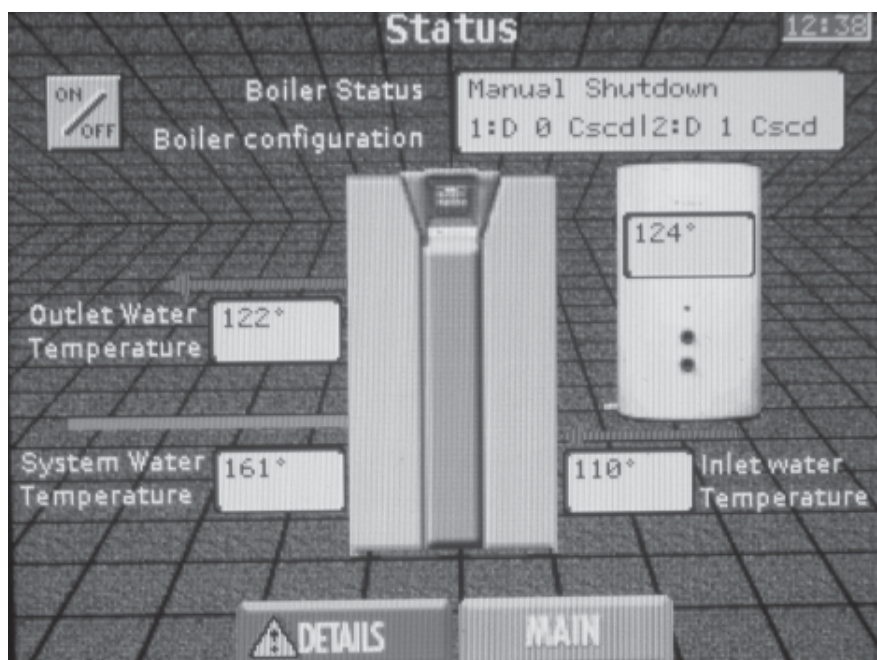
## 4 SMART TOUCH control module

### **SMART TOUCH**™ SYNC control module

The Status Screen displays boiler status, Cascade addresses, outlet water temperature, inlet water temperature, system temperature, and tank temperature.

The boiler can be changed by pressing the ON/OFF button. The Details Screen and Main Menu Screen can be accessed by pressing the appropriate button.

**Figure 4-1** Status Screen



When the ON/OFF switch is turned to the ON position, the first screen visible on the LCD display will be the Status Screen. This screen displays the current status of the SYNC boiler. The following items can be viewed or interacted with on the Status Screen:

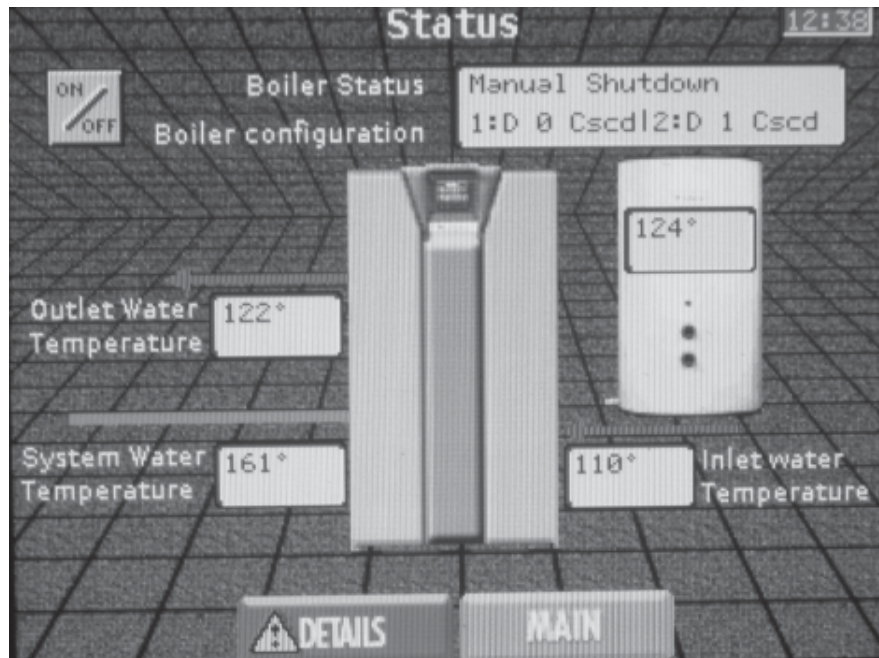
**On/Off button** - Pressing this button allows the boiler to be placed in either Manual Shutdown Mode or Standby Mode.

**Boiler Status** - This line shows the current operating status of the SYNC boiler. Displayed items are as follows:

- Manual Shutdown - The boiler will not respond to either a system call or a hot water generation call.
- Standby - The boiler has not received a system call or hot water generation call.
- SH Call for Heat - The boiler has received a system heat call.
- SH Pump Delay - The boiler has satisfied a system heat call and the boiler pumps are running for a fixed time to remove any residual heat.
- HW Storage - The boiler has received a hot water generation call.
- HW Pump Delay - The boiler has satisfied a hot water generation call and the hot water generator pumps are running for a fixed time to remove any residual heat.

- SH BMS - The boiler has received a call for heat from a 0-10 VDC BMS control.
- Service Set Point Met - While in Service Mode, the water temperature at either the outlet sensor or the system sensor has exceeded 185°F.
- HW Outlet Set Point Met - The outlet water temperature has exceeded the HW Generator Set Point parameter.
- OA Shutdown - The outside air temperature has exceeded the Outdoor Shutdown Set Point parameter.
- SH Set Point Met - The water temperature as measured by the system supply sensor has exceeded the User Set Point parameter or if the optional Outdoor Air Sensor was used, the calculated set point based on the Outdoor Reset parameters.
- Anti-Cycle Delay - The boiler has satisfied a system heat call, but has received another system heat call before the anti-cycling time parameter has elapsed.
- Cascade ComError - A communication error has occurred between the Control Module 1 and Control Module 2 or between the Leader and Member boilers.

## 4 SMART TOUCH control module *(continued)*



**Boiler Configuration** - This line shows the current configuration of the two control modules inside the unit.

**Outlet Water Temperature** - This is a calculated temperature based on the readings of the outlet temperatures of the two (2) heat exchangers.

**System Water Temperature** - This is the water temperature as measured by the system supply sensor located in the downstream piping.

**Inlet Water Temperature** - This is a calculated temperature based on the inlet temperature readings from the two (2) heat exchangers.

**Hot Water Tank Temperature** - This is the temperature as measured by the tank sensor in the hot water storage tank.

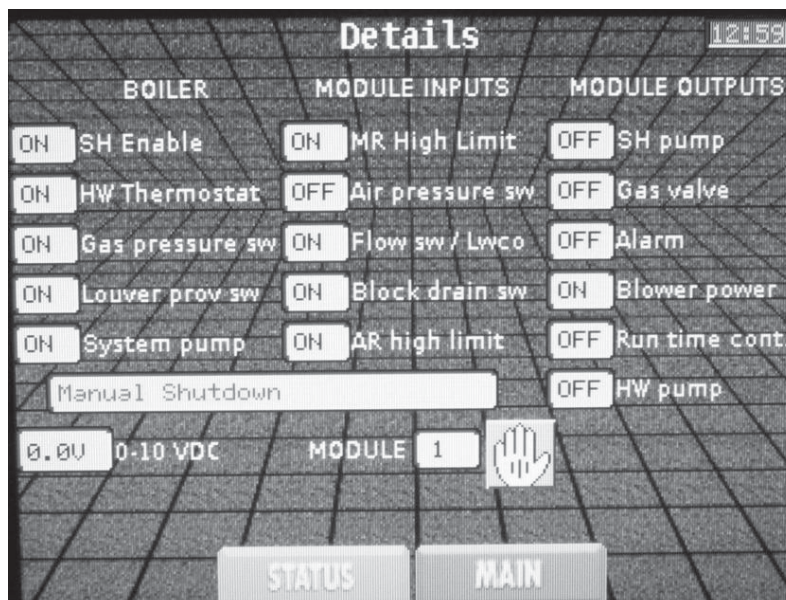
**Time** - The time is displayed in the upper right-hand corner of the display. It is displayed in 24 hour format. Reference the Night Setback parameters in the SYNC Service Manual for information regarding adjusting the date and time.

**Details** button - Pressing this button brings up the Details Screen. This screen shows the status of the various safeties, inputs, and outputs to each control module. Reference the Details Screen section on pages 12 - 13 for more information regarding this screen.

**Main** button - Pressing this button brings up the Main Screen. From this screen navigation to eight (8) other screens is possible. Reference the Main Screen section on page 14 of this manual for more information regarding this screen.

## 4 SMART TOUCH control module

**Figure 4-2** Details Screen



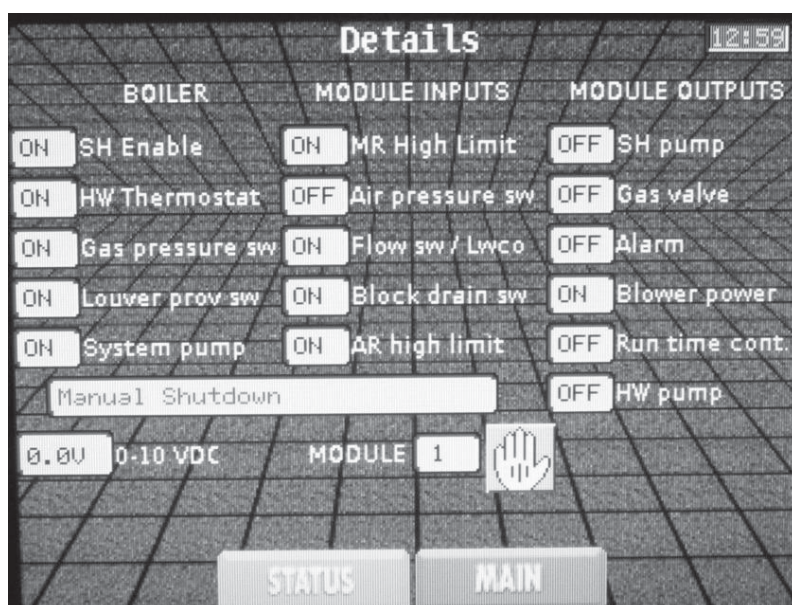
The Details Screen is accessed by pressing the DETAIL button on the Status Screen. This screen shows the status of the various safeties, inputs and outputs to each control module. Selection of the control module to be viewed is accomplished by pressing the SELECT button. The control module being displayed is shown in the module box.

Displayed items are as follows:

- SH Enable - Is ON when a system heat call has been received from a remote end switch or enabling device. Is OFF when a system heat call is not present.
- Manual Reset High Limit - Is ON when the manual reset high limit is closed. Is OFF when the manual reset high limit is not open.
- SH Pump - Is ON when a system heat call has been received and the boiler pump is energized. Is OFF when the boiler pump is de-energized.
- HW Thermostat - Is ON when a Hot Water Generation call has been received from a tank thermostat. Is OFF when a Hot Water Generation call has not been received from a tank thermostat.
- Air Pressure Switch - Is ON when the combustion air blower is energized and the flap valve switch is closed. Is OFF when the flap valve switch is open.
- Gas Valve - Is ON when the gas valve is energized. Is OFF when the gas valve is de-energized.
- Gas Pressure Switches - Is ON when the high and low gas pressure switches are closed. Is OFF when either the high or low gas pressure switches are open.
- Flow Switch / Low Water Cutoff - Is ON when the low water cutoff contacts are closed or if an optional flow switch is used and it is closed as well. Is OFF when the low water cutoff contacts are open or if an optional flow switch is open.

- Alarm - Is ON when a fault has been detected and the alarm contacts are closed. Is OFF when the alarm contacts are open.
- Louver Proving Switch - Is ON when a remote proving safety switch is closed. Is OFF when a remote proving safety switch is open.
- Blocked Drain Switch - Is ON when the blocked drain switch on the condensate trap is closed. Is OFF when the blocked drain switch on the condensate trap is open.
- Blower Power - Is ON when the combustion air blower is energized. Is OFF when the combustion air blower is de-energized.
- System Pump - Is ON when a system heat call has been received and the system pump has been energized. Is OFF when the system pump is de-energized.
- Auto Reset High Limit - An auto reset high limit is not used in the standard configuration of the SYNC boiler. If OFF is shown then a wiring problem exists.
- Run Time Contacts - Is ON when the burner is energized. Is OFF when the burner is de-energized.
- HW Pump - Is ON when a Hot Water Generation call has been received from a tank thermostat or a tank sensor and the hot water generation pump is energized. Is OFF when the hot water generation pump is de-energized.

## 4 SMART TOUCH control module *(continued)*



A blank message box is located on the Details Screen. This box will display various messages detailing the status of the control module. If a message is present in this box, the DETAILS button on the Status Screen will contain a yellow triangle with an exclamation mark (!) inside.

Displayed items are as follows:

- Delta T Shutdown - The temperature rise between the inlet and outlet temperatures has exceeded 55°F. Reference the SYNC Service Manual for more information regarding this shutdown.
- Outlet Temp Shutdown - The outlet temperature has exceeded 195°F. Reference the SYNC Service Manual for more information regarding this shutdown.
- Flue Temp Shutdown - The flue temperature has exceeded 240°F. Reference the SYNC Service Manual for more information regarding this shutdown.
- Voltage too Low - The 120 VAC input to the control has dropped below 80 VAC. Reference the SYNC Service Manual for more information regarding this fault message.
- Connect System Sensor - System sensor is not detected by Control Module 1. For proper operation of the SYNC boiler the system sensor must be connected.
- Manual Shutdown - The boiler has been shutdown with the ON/OFF button on the Status Screen.

**Time** - The time is displayed in the upper right-hand corner of the display. It is displayed in 24 hour format. Reference the night setback parameters in the SYNC Service Manual for information regarding adjusting the date and time.

**Status** button - Pressing this button displays the Status Screen. This screen shows the current status of the SYNC boiler. Reference pages 10 - 11 for more information regarding this screen.

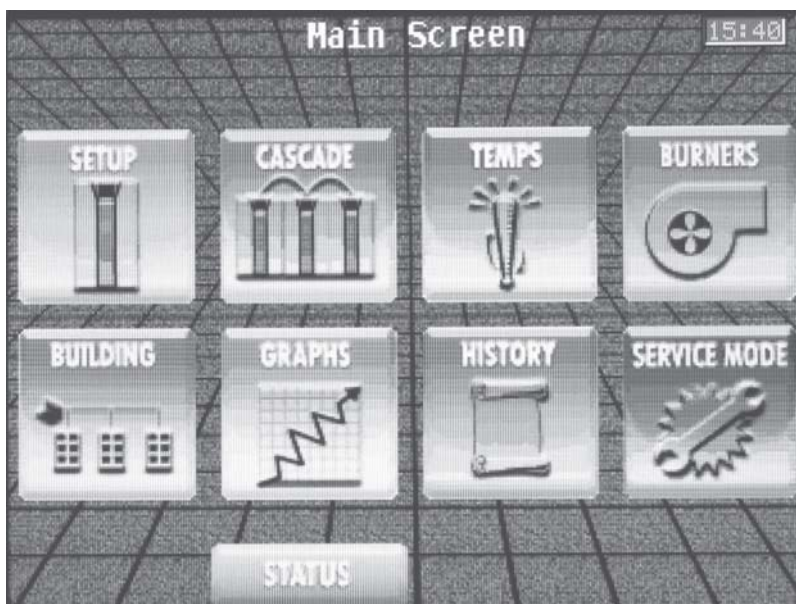
**Main** button - Pressing this button displays the Main Screen. From this screen, navigation to eight (8) additional screens is possible. Refer to Main Screen on page 14 for more information regarding this screen.

## 4 SMART TOUCH control module

Use the Main Menu Screen (FIG. 4-3) to access the screens necessary to set temperatures, operating conditions, and monitor boiler operation.

The SYNC is equipped with a SMART TOUCH control system. All menu options are accessed by touching the screen with your finger or a stylus from a PDA.

**Figure 4-3** Main Menu Screen



The Main Screen allows navigation to eight (8) additional screens which are used to set temperatures, operating conditions, and monitor boiler operation. These screens are as follows:

- **Setup** - Allows access to seven (7) other screens for the adjustment of the control parameters.
- **Cascade** - Shows the status of multiple boilers connected together in a cascade arrangement.
- **Temps** - Shows the temperatures measured by the individual sensors connected to the boiler.
- **Burners** - Shows the status of the two (2) independent burner systems used in the boiler.
- **Building** - Shows the information from a Building Integration System using Modbus Protocols.
- **Graphs** - Allows the selection of items to be graphed on a chart.
- **History** - Shows the operating and fault history of the two (2) control modules.
- **Service Mode** - Allows the installer to control the fan speed of the individual control modules for the purposes of combustion analysis. Service Mode will override all other heat demands, however, all safeties will remain intact.

Navigation to the Main Screen can be accomplished by pressing the MAIN button at the bottom of the page.

Reference the SYNC Service Manual for more information regarding the eight (8) accessible screens.

**Time** - The time is displayed in the upper right-hand corner of the display. It is displayed in 24 hour format. Reference the night setback parameters in the SYNC Service Manual for information regarding adjusting the date and time.

**Status** button - Pressing this button displays the Status Screen. This screen shows the current status of the SYNC boiler. Reference pages 10 - 11 for more information regarding this screen.

# Notes

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**Revision Notes:** Revision A (ECO #C02428) initial release.

Revision B (ECO #C04062) reflects changes to the terminology in all SYNC manuals and labels from module to heat exchanger (exception: control module).

Revision C (ECO #C05672) reflects the change from automatic air vent to manual air vent. The chart on page 5 was updated and a new image of the air vent valve was inserted on page 8 (FIG. 3).

Revision D (ECO C07072) reflects the change in design of the manual air vent and the update of FIG. 2-3 on page 8.

Revision E (ECO C14411) reflects changes made to the condensate trap (R6594), along with the addition of the corrosive contaminant warning on page 3 (R06313).